Analyze This!
A Primer on Making Sense of Your Data

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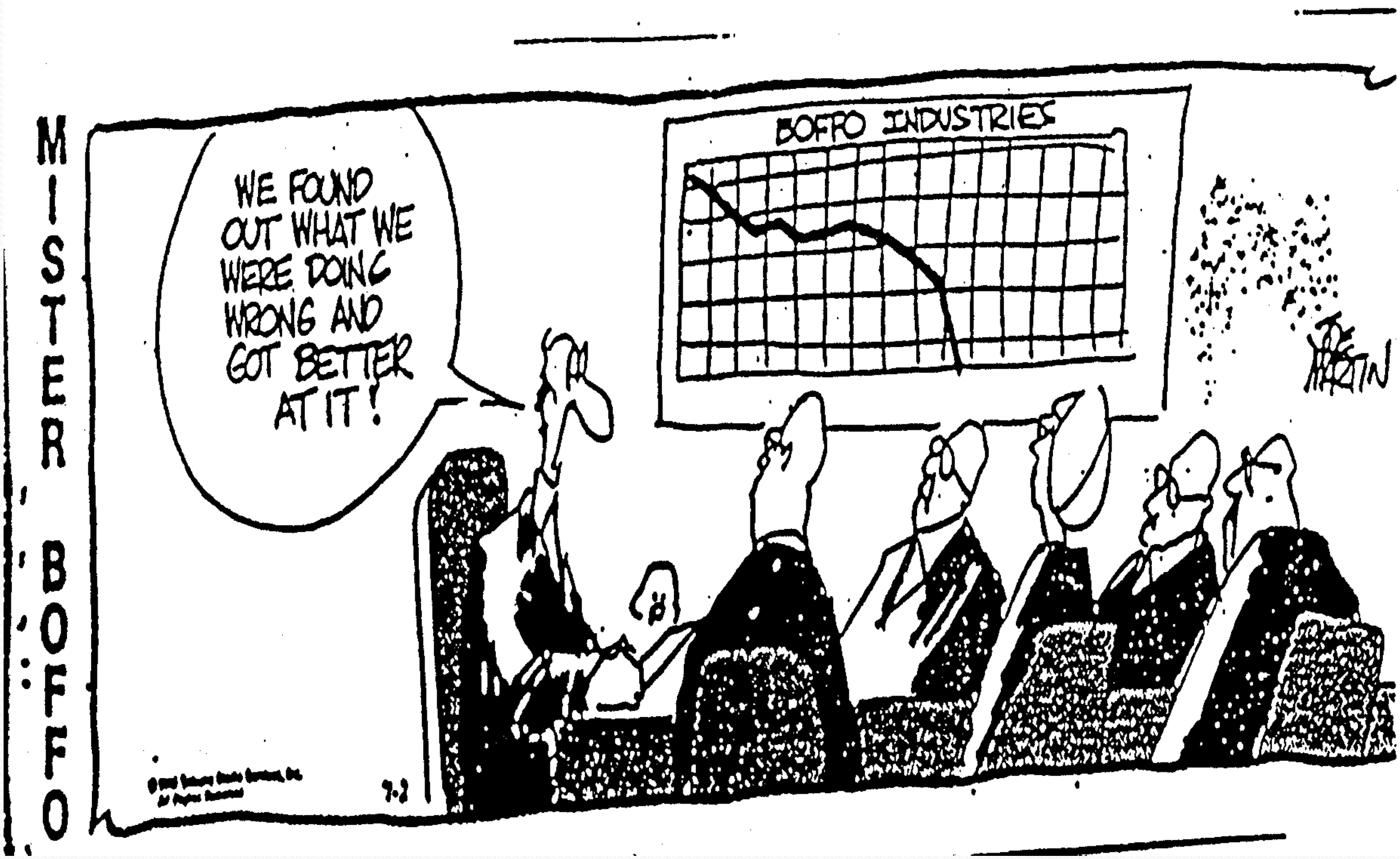
Learning Objectives

This session is intended to;

- Review some key concepts in data analysis
- Outline steps for analysis and utilizing the information for decision making

What NOT to do…



Introduction

- Organizations tend to be better at collecting data than at doing in-depth analysis of that data to identify trends, patterns and opportunities for improvement
- Are we measuring to improve or impress???

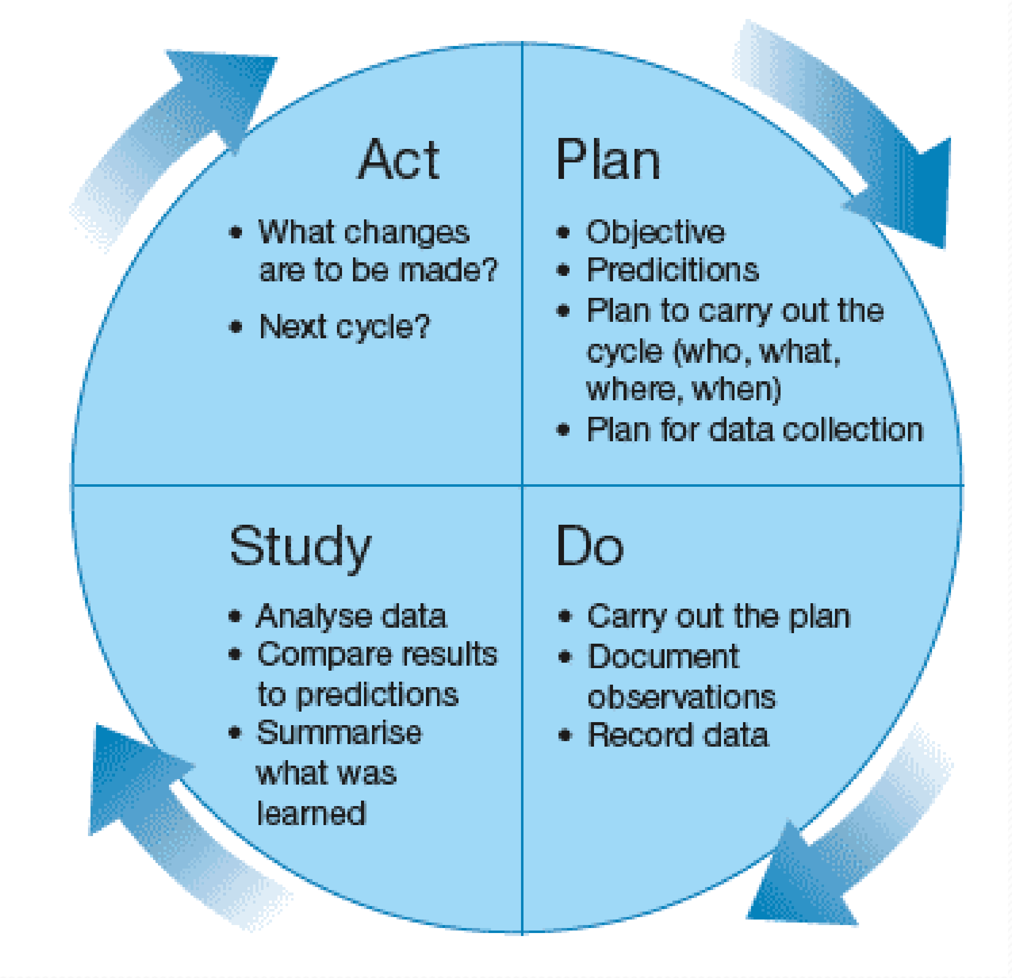
Continuous Quality Improvement

- A **continual improvement process** is an ongoing effort to improve products, services, or processes. These efforts primarily seek "incremental" improvement over time. Delivery (customer valued) processes are constantly evaluated and improved in the light of their efficiency, effectiveness and flexibility.

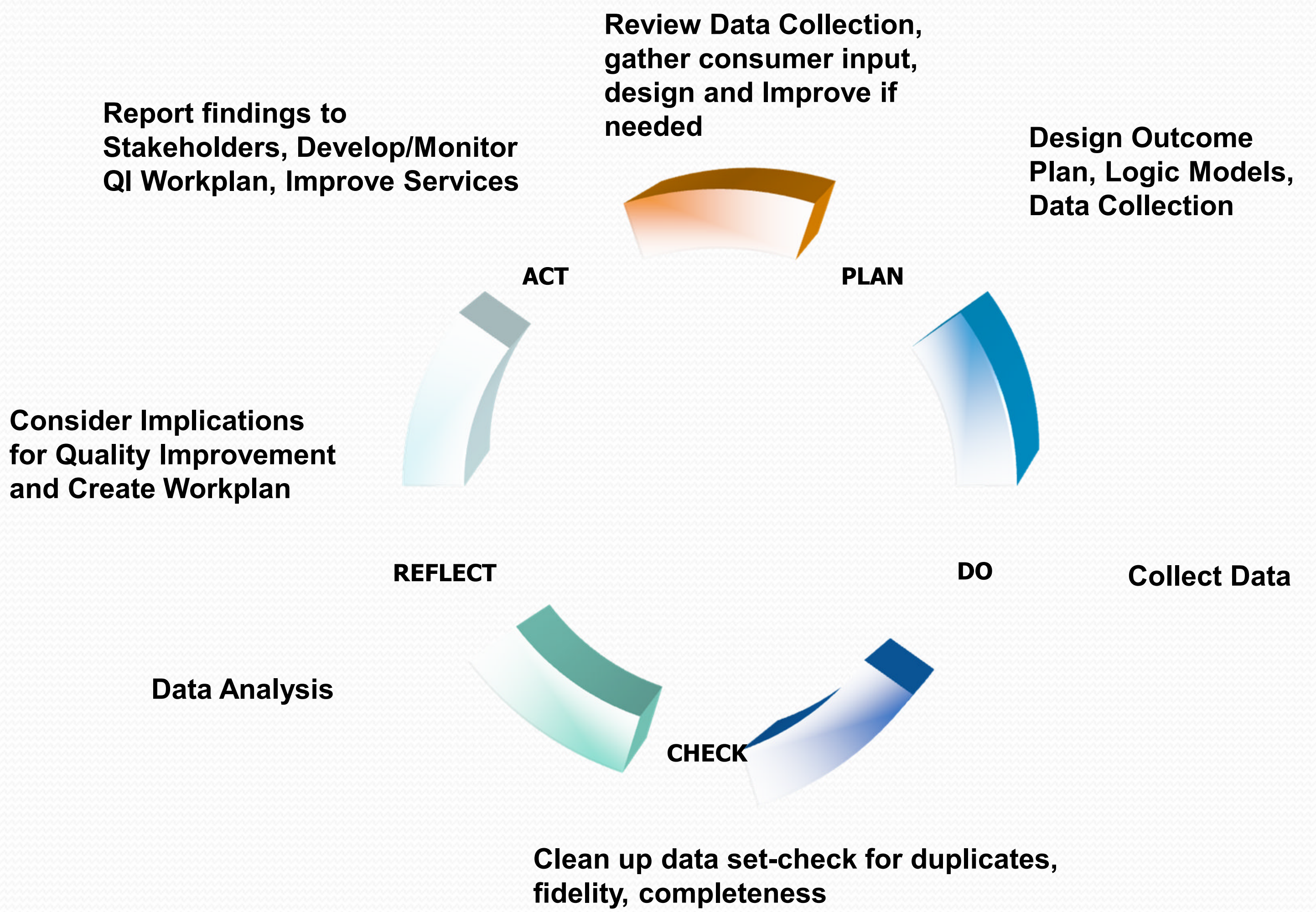
CQI is about applying a learning cycle…

- Deming is acknowledged as a pioneer in this area.
- Developed the Plan-Do-Check-Act cycle
- Many other versions have been developed and adapted since…

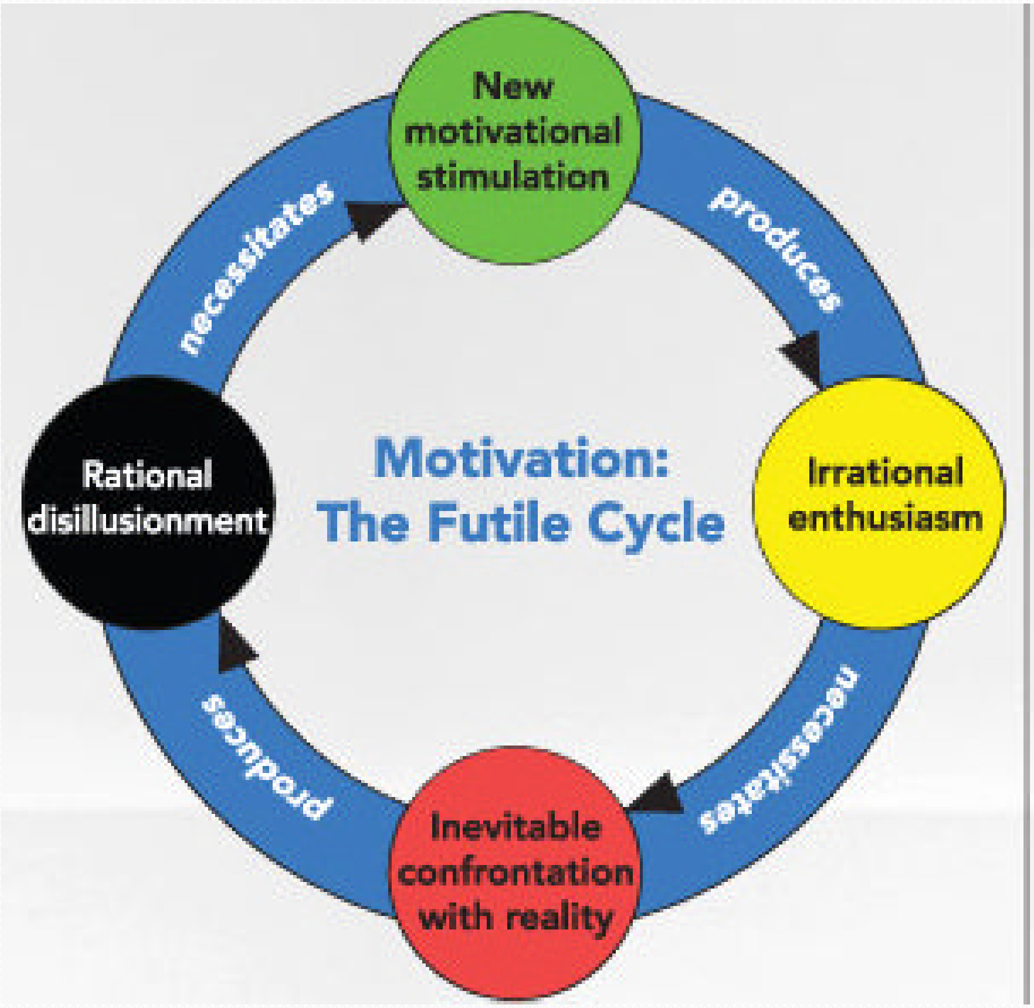
Plan-Do-Study-Act



Plan-Do-Check-Reflect-Act



What really happens (sometimes)



Step One – Gather the Data

- Review Data/Generate Reports
- Find out what you have
- Can cut across multiple domains – even though they may not seem connected, it is important to know what you have.
- Can be used for simple presentation of the data

Common Domains of Measurement

- Effectiveness of the program or intervention (outcomes & impact)
- Efficiency of systems/processes (inputs & outputs)
- Maintenance of quality standards (deviations from intended client or customer experience in terms of accessing the program or feedback with what is received)

Step Two – Check the Data

In reviewing the data, consider completeness:

- What was the response rate from surveys? If it was low, does the data appear to be representative enough to proceed?
- Is there pre and post test data on all clients that have been discharged?
- Is the client demographic and characteristic data complete (i.e., information on all clients for the chosen characteristics?)

Step Two – Check the Data

- Consider:
  - Data Reliability (often linked to the process of collection)
  - Data Validity (about the concept)
- The key is to understand where your data came from and how it was collected.
- Remember, ‘Garbage In, Garbage Out!’

M. Performance Measurement and Management

Reliable

Reliable and Valid

Step Two – Check the Data

- Consider;
  - Are any limitations to interpretation based on incomplete data sets?
  - If the data set is considered compromised due to incompleteness in any area, should you delay analysis until the problems can be rectified?

Step Three – Comparative Analysis

- The point of evaluation is to compare your results against something. This could include comparing with;
  - Pre-Established Targets (i.e., KPI)
  - Previous Time Periods
  - Other Programs You Deliver
  - External Benchmarks

Comparing with Pre-Established Performance Targets or Benchmarks

- Targets can be set based on previous results or experience, or could be determined by a funding source
- Targets can (and should) be adjusted over time based on results
- They are our “Hoped For” performance

Benchmarks & Targets

- Targets allow you to take action based on results.
- Consider the Following:
  - Percentage who obtain employment = 80%
  - Cost per persons who obtains a job = $8,630

- Is this good news, bad news or no news?

Benchmarks & Targets

- Setting the expectation will change the way you interpret the result.
- Consider the Following:
  - Percentage who obtain employment = 80%
  - **Target = 90%**

  - Cost per persons who obtains a job = $8,630
  - **Target = $10,500**

  - What does it mean????

Comparing with Previous Time Periods

- Time period comparison indicates the extent to which outcomes are getting better or worse.
- This comparison can also be used to assess the impact that past program changes have had (i.e., the results of efforts made as part of a previous Performance Improvement Plan).

Comparing with Previous Time Periods (Trending)

- Comparisons across time can have a number of variations, such as:
  - the most recent year compared with the previous year
  - the current month or quarter compared with the previous month or quarter
  - the current month or quarter compared with the same period in the previous year
  - the cumulative performance so far this year compared with the cumulative performance over the same period of time in the previous year

	Comparison to Previous Period			Comparison to Same Period Last Year		Comparison to Target	
Indicator	Current Period	Last Period	% Variance	Same Period Last Year	% Variance	Target or Target Range	On Target (as expected)?
✓ Total Served (unduplicated count)							**Y/N**
✓ Total New in quarter							**Y/N**
✓ Total Closed in quarter							**Y/N**
✓ Total Caseload (last day of reporting period)							**Y/N**
✓ Average Caseload/FTE (last day of reporting period)							**Y/N**
✓ # of individual sessions or visits delivered							**Y/N**

Comparisons with Other Programs You Deliver

- It can be useful to compare outcomes across agency programs in certain circumstances and for certain kinds of measures. For example;
  - Comparing levels of satisfaction
  - Comparing levels of utilization
- The purpose for the comparison is for learning and growth – an opportunity to examine and try to understand differences where differences exist.

An Example….

Program	Positive Response Result	Goal Met?
Residential Services	100%	Met
Community Options	91.3%	Met
SIL	90.9%	Met
Respite Services	88.9%	Not Met
Family Home	66.7%	Not Met
Family Support	100%	Met

Step Four – Advanced Analysis

- Advanced analysis is the opportunity to get deeper into the data – to look for trends and patterns that may not be apparent from simply generating static reports or from comparing against targets/benchmarks, different time periods and different programs. It includes;
  - Comparing Outcomes based on Client Characteristics, Barriers and Severity Factors
  - Comparing Outcomes based on Service Characteristics

Comparison Based on Client Characteristics, Barriers and Severity Factors

- Examining outcome data broken out by important client characteristics allows you to determine what characteristics seem related to results
- Can direct program staff toward more effective strategies for serving clients who are not experiencing benefits, or as great a benefit.
- Each program should identify which characteristics are likely to have a substantial effect on outcomes.

Characteristics, Barriers, Severity

- Consider;
  - What characteristics make a person more difficult to serve?
  - What are the barriers to individuals obtaining positive outcomes?
  - What severity factors appear to make a difference in obtaining positive outcomes?
  - Bottom line - what seems to make a difference?

Comparison Based on Client Characteristics

- Examples include;
  - Gender - Examine outcomes for males vs. females
  - Age - Examine outcomes for different age ranges. Can also include an analysis of outcomes based on caregiver age
  - Culture/Ethnicity - Examine outcomes for clients based on cultural background or ethnicity.
  - Household - Examine outcomes for households with different characteristics, such as number of children, single parent versus two parent, etc.
  - Issue Severity at Intake - Examine outcomes by incoming status

Comparison Based on Client Characteristics, Barriers and Severity Factors

- Ensure that the information is consistently collected and recorded.
- Consider brainstorming possible characteristics at the beginning of your data collection cycle.
- For each client characteristic selected, clearly defined categories need to be created so that the analysis can be meaningful. Remember – data can be collapsed but not expanded.

Consider the Following Two Organizations

- Both organizations use the same metrics
- Both claim the persons they serve are “tougher”
- Both use the same characteristics, barriers, and severity factors for persons served

- Does this information assist decision making?

Consider the following…

Primary Measures	Organization ABC	Organization XYZ
1. Percent of all program starts who are placed and maintain a job for 90 days.	20%	70%
2. Average cost per client placed and maintain a job for 90 days	$3,063	$1,827
3. Delay time from initial contact to program start	21 days	16 days
4. Persons served report satisfaction with services received.	76%	81%

Do these variables make a difference?

	Organization ABC	Organization XYZ
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Client Descriptors		
1. Chemically Dependent	94%	1%
2. Average Age	55.3	17.9
3. Average Years of Education	7.2	12
4. Length of Unemployment (months) prior to admission	11.6	0.7

Comparison Based on Client Characteristics, Barriers and Severity Factors

- Discussion: What are the characteristics that you believe will be important for your program to collect information on? Why?

Comparison Based on Service Characteristics

- Group clients by service characteristics. These characteristics might include breakouts by;
  - the type of service provided
  - the amount, frequency or intensity of service provided;
  - the service provider’s characteristics

Comparison Based on Service Characteristics

- Examples;
  - Type of Service Provided - Examine outcomes for clients who were served using different modes of service delivery. For example, are there differences between those served in groups compared to individually?
  - Amount of Service - Examine outcomes for clients who received varying amounts of service. This might be expressed as number of sessions a client attended or the number of hours of service provided each participant.
  - Service provider - Examine outcomes for clients based on the characteristics of those who provided the service, such as years of experience.

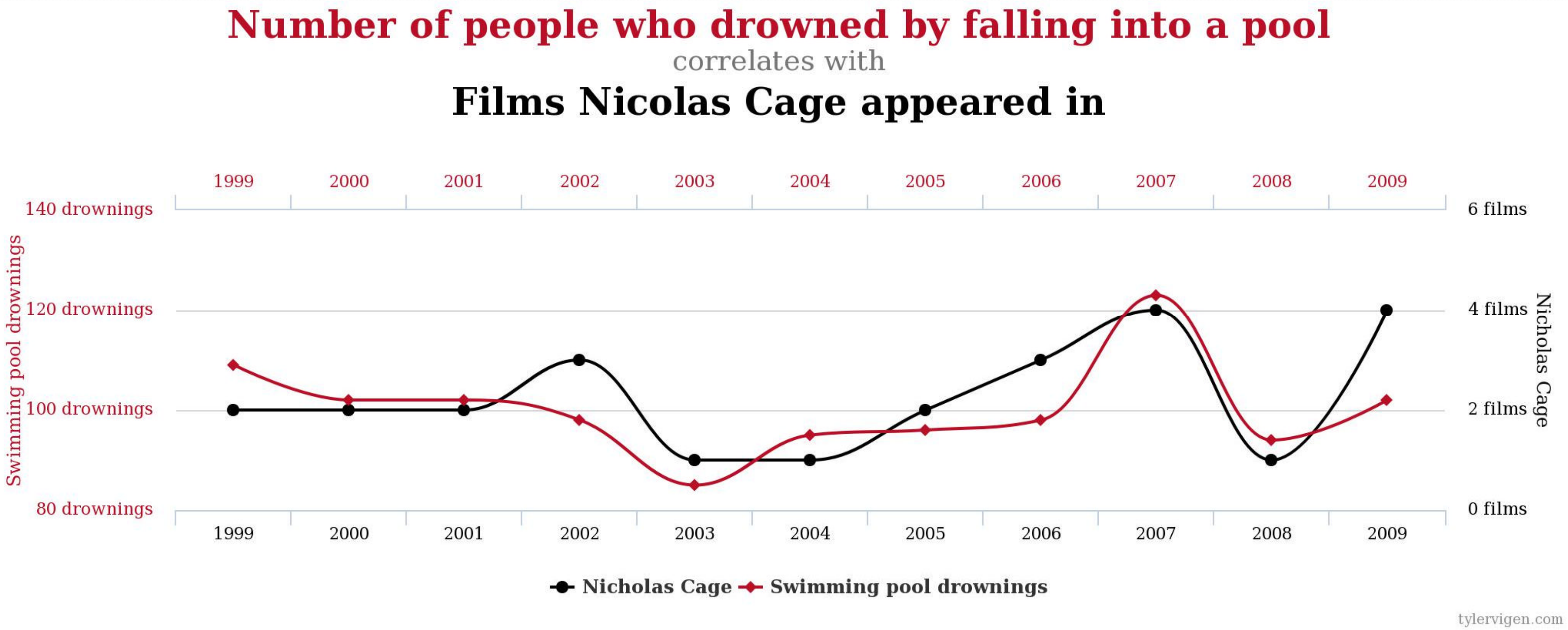
Comparison Based on Client and Service Characteristics

- Example: Do Psychotherapists Improve With Time?
- http://www.scottdmiller.com/feedback-informed-treatment-fit/do-psychotherapists-improve-with-time-and-experience/
- Demonstration: Using Pivot Tables (Cross Tabs) to Analyze Data

A note on spurious correlations..

- Just because there is a pattern or trend, it does not mean that things are necessarily connected!!!
- Consider if the pattern or trend is logical or reasonable
- Visit http://www.tylervigen.com/spurious-correlations

An example…



Number of people who drowned by falling into a pool
correlates with
Films Nicolas Cage appeared in
140 drownings
120 drownings
100 drownings
80 drownings
Swimming pool drownings
6 films
4 films
2 films
0 films
Nicholas Cage
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
Nicholas Cage
Swimming pool drownings
tylervigen.com

Step Five – Reflection & Action

- A step we often short change
- A step that needs to be embedded at a service delivery level
- A step that can yield real change if we're willing to embrace the unknown, be vulnerable, and take risks.

Who should be involved and how often should it occur???

- Interpreting results requires the involvement of those most directly involved in delivering the service and/or generating the data.
- <u>Continuous</u> quality improvement requires <u>Continuous</u> analysis

Start By Identifying what Needs to be Highlighted

- Once the data have been collected, checked for completeness and some basic analysis has been performed, identify those findings that appear unusual, unexpected, overly low, or overly high.
- In simple terms… what catches your eye?

Start By Identifying what Needs to be Highlighted

- Consider;
  - How much worse than the previous reporting period, or worse than the target, does the latest outcome value have to be before it warrants significant attention?
  - How important is the difference? Practical importance is a judgment call by the team (i.e., this isn't about statistical significance).

What's Missing???

- Is there other data that could help you tell a more complete story?
- Are there more questions raised by the analysis that require you to go back and gather other information or re-analyze the data?

Seek Explanations

- Data by themselves say little, if anything, about why they are high or low. Before actions are taken on outcomes that appear poor (or great), the team should seek explanations for the findings.
- Look for the specific factors that affected the highlighted outcome findings.
- Internal and/or external factors may have affected the results.

External Factors

- Examples Include;
  - Changes in external conditions in the community, such as unexpected local or national economic conditions (perhaps affecting participant employment opportunities).
  - Changes in the mix of participants that came in for service, such as an unexpectedly large proportion of participants with major difficulties.
  - Unexpected reductions or gains in program funding and staff.
  - Various social and political influences in the community.

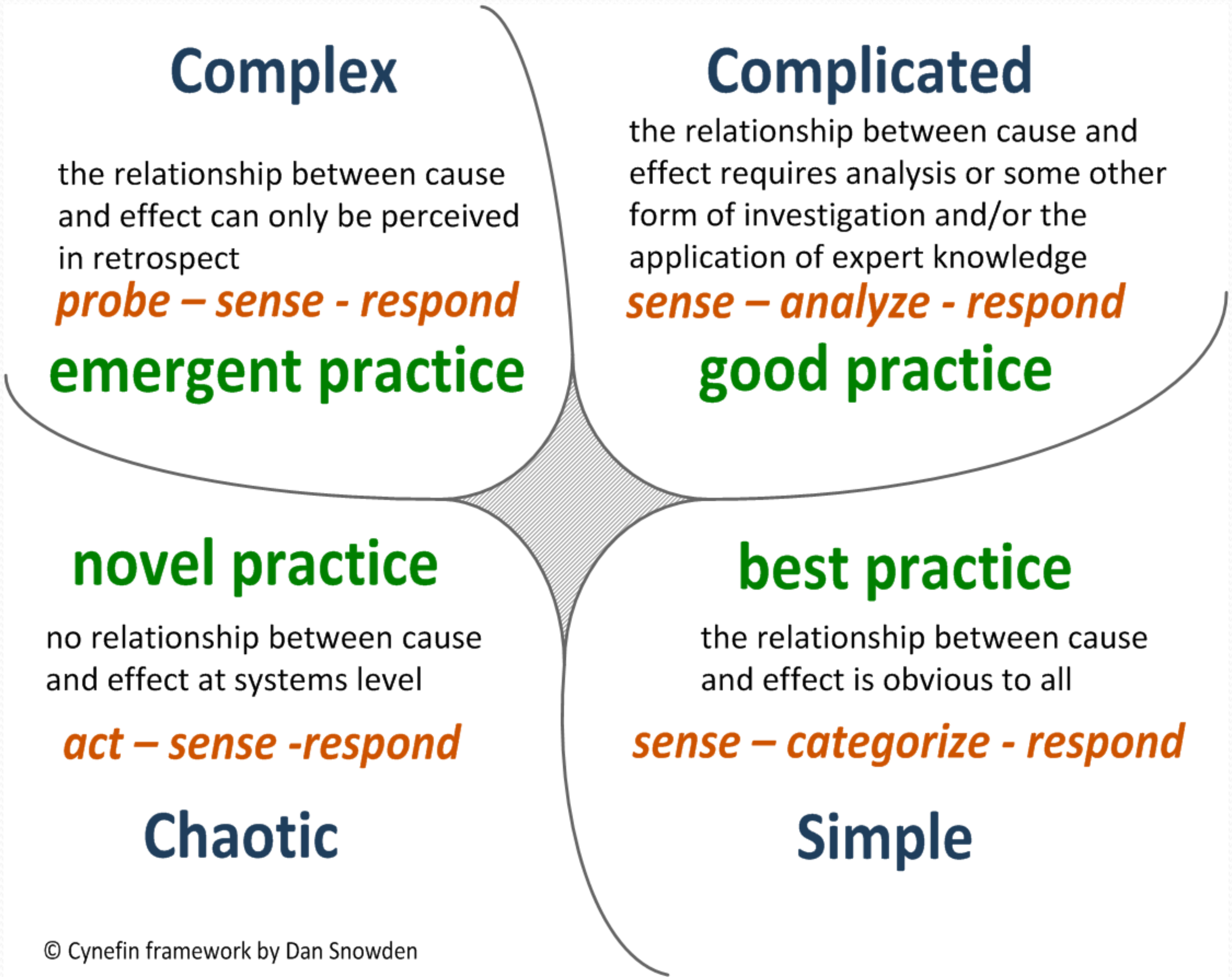
Internal Factors

- Examples Include;
  - Problems with the design of the program.
  - Problems in implementing the program, such as inadequate staff training or poor communications with participants.
  - Unexpected staff turnover or absenteeism.
  - Changes in direction by agency management, the Board of Directors or a funder.

Taking Action…

- Sometimes the reason for the results (and the path forward) isn't obvious. It may require more data collection.
- If it's about solving a service delivery or systems problem, consider problem solving tools;
  - Complex Systems Tools – The Cynefin Framework

The Cynefin Framework



Taking Action…

- Acting can sometimes require having uncomfortable conversations or facing difficult choices
- Courage and a willingness to be vulnerable and risk failure may be required.
- But remember…

“Vulnerability is the birthplace of innovation”

Brené Brown

The Key: Do Something!!!

- There is value in demonstrating that action will be taken.
- Hawthorne Effect…

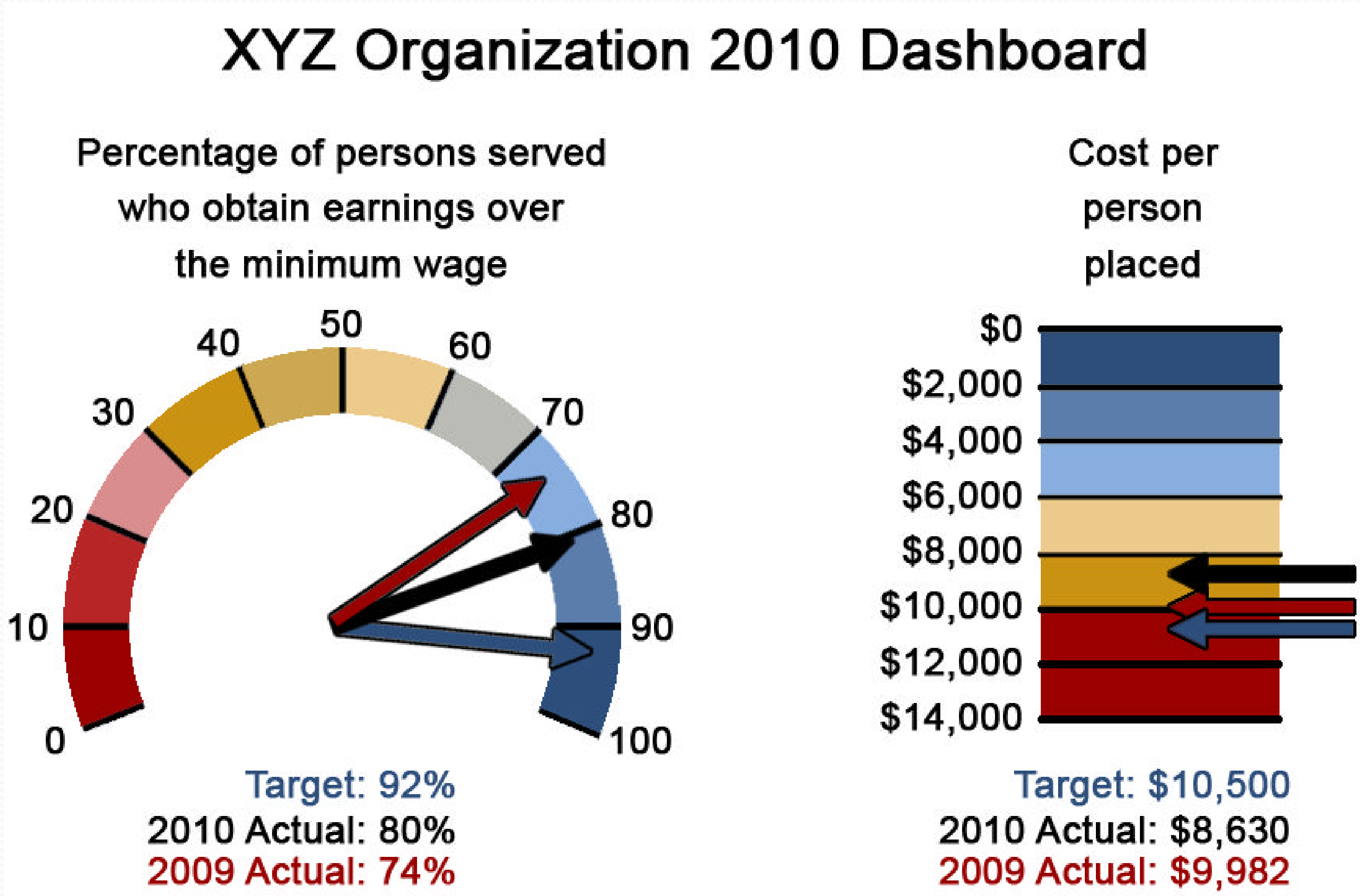
Preparing the Report & Improvement Plan

- Once the data has been gathered, analyzed and reflected upon, and the action steps have been defined, the final step is reporting out.
- Some examples…

Reporting on Performance…

- Key Result Areas (KRA’s)
- Balanced Scorecards
- Report Cards
- Dashboards

Sample Dashboard



Sample Balanced Scorecard

Victoria Cool Aid Society
2013/14 Balanced Scorecard Report

Measure Performance at a Glance

		Performance			Targets	Targets	Targets
	Baseline	2011/12	2012/13	2013/14	2011/12	2012/13	2013/14
Prime Objective							
1–***End homelessness in Greater Victoria by 2018***	(2010/11)						
Number of unique shelter clients decreases over time	1,550	◈	◈	×	↓	↓	↓
Stakeholder Perspective							
1–***Increase housing stock***							
New housing units opened	—	✓	✓	—	36	23	—
New housing units in development	—	✓	✓	✓	59	45	45
2–***Expand health & support services***							
Increased hours of service at dental clinic	35 hrs/wk	✓	complete	—	39	—	—
New measure(s) to be determined	—	—	—	—	—	—	—
3–***Improve service integration***							
New measure(s) to be determined	—	—	—	—	—	—	—
4–***Accelerate access to services***							
Decreased dental waitlist time for current patients	> 6 months	✓	✓	✓	< 6 months	< 4 months	3 months
More shelter clients transition to sustainable housing	152 clients	✓	◈	✓	↑	↑	↑
5–***Strengthen service experience***							


Pie I have eaten
Pie I have not yet eaten

Some final thoughts…

- Our instinct is to grow… improve… evolve.
- Failures and mistakes are natural. In fact, it should be expected.
- Learning from mistakes is optional.

Wrap-up

- Questions?

- Stay in touch....
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